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| EXAMINER | |
|---|---|
| WEST, JEFFREY R | |

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Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. 10/051,297 | Applicant(s) WALTER ET AL. | |
|---|---|---|---|
| | Examiner Jeffrey R. West | Art Unit 2857 | MW |

*-- The MAILING DATE of this communication appears on the cover sheet with th correspondence address --*

**P ri d for R ply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *16 April 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 January 2002* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5 and 6*.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

## DETAILED ACTION

### *Oath/Declaration*

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the city and either state or foreign country of residence of each inventor. The residence information may be provided on either on an application data sheet or supplemental oath or declaration.

### *Information Disclosure Statement*

2. The references listed on the Information Disclosure Statement filed, January 22, 2002, have not been considered because a corresponding translation has not been provided.

### *Drawings*

3. The drawings are objected to because they do not have sufficiently descriptive labels. Blank boxes in drawings should be labeled descriptively unless it is a well-known component.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "26" (page 18, 0053, line 9) and "39" (page 19, 0055, line 9).

5. The drawings are objected to because of the following informalities:

In Figure 2, reference number "2" is labeling an amplifier while the specification defines reference number "2" as a sensor (page 11, 0035, line 3).

In Figure 5b, it is unclear why the multiplier is labeled "10" twice.

The overall drawing in Figure 6a is labeled "10", however, it is unclear how multiplier "10" can contain elements 3, 4, 8, and 28 when Figure 1 shows these elements as separate components.

In Figure 6b, it is unclear why a component is labeled "2,8(18)" when, as shown in Figure 1, components "2" and "8" are separate from component "18".

6. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

***Specification***

7. The abstract of the disclosure is objected to because its length exceeds the 150-word limit. Correction is required. See MPEP § 608.01(b).

8. The disclosure is objected to because of the following informalities:

On page 11, 0035, line 7, "at the output 2 of the sensor" should be ---at the output of the sensor 2---.

On page 18, 0035, lines 4-5, the specification refers to Figures 6a and 6b stating, "the negative supply voltage $U_{B-}$ being present at the second input terminal 23," while Figure 6b shows $U_{B-}$ present at the input terminal 24.

On page 19, 0056, line 4, "storage capacity 33" should be ---storage capacitor 33---.

On page 20, 0058, line 2, "programming device 35" should be ---programming device 37---.

Appropriate correction is required.

***Claim Objections***

9. Claims 1 and 16 recite a limitation specifying that the electronic transducer is "capable of being controlled with the processor circuit" and "capable of being programmed using the processor circuit", respectively. It has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform and does not constitute a patentable limitation. See In re Hutchison, 69 USPQ 138. Therefore it is suggested that Applicant re-word this limitation.

Similarly claim 11 recites, "an attenuator, capable of having an adjustable time constant", claim 12, recites, "one different RC element which can be selectively connected via the processor circuit", and claim 13 recites, "wherein an analog error at the output of the attenuator can be compensated by a control circuit."

In claim 1, line 12, "of the analog scaling unit supplied" should be ---of the analog scaling unit is supplied---.

In claim 2, line 2, to avoid confusion, "analog arithmetic circuit to which as the analog setting value," should be ---analog arithmetic circuit to which, as the at least one analog setting value,---.

In claim 3, lines 3-4, to avoid confusion, "the scaling unit" should be ---the analog scaling unit---.

In claim 7, line 2, to avoid confusion, "at least one of at least one subtractor and at least one adder" should be ---at least one of, at least one subtractor or at least one adder---.

In claim 11, line 2, "is connected" should be ---connected---.

In claim 14, line 3, to avoid confusion, "certain power supply voltage" should be ---predetermined power supply voltage---.

### *Claim Rejections - 35 USC § 112*

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

11. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "wherein during normal operation of the electrical transducer . . . the analog measurement signal transmission path and analog scaling unit are

inserted". This limitation is considered to be vague and indefinite for several reasons. First, the limitation "are inserted" does not describe to one having ordinary skill in the art where the components are inserted. Second, the specification defines the transmission path and the analog scaling unit as components. Therefore, one having ordinary skill in the art would interpret the limitation of inserting as physically placing the components at a location. However, since this is not in accordance with the method of the invention, the limitations are unclear.

In claim 3, the limitation of "the at least one DC voltage signal" lacks proper antecedent basis because claim 2 specifies only one DC voltage signal.

In claim 3, the recitation, "as the actuator" is considered to be vague and indefinite because there is no previous mention of any actuator.

In claim 3, it is unclear what conditions are to be met. The limitation, "at least one of at least one active integrator as the actuator for the at least one DC voltage signal or, at least one direct current signal and the active integrator is connected to the processor circuit and scaling unit" suggests that the claimed limitation would be met by either, "at least one active integrator" or "at least one direct current signal". Therefore it remains unclear to one having ordinary skill in the art how, if "at least one direct current signal" is present, how the limitation requiring "the active integrator is connected to the processor circuit and to the scaling unit" can further limit the "at least one direct current signal".

In claim 4, "the active integrators" lacks proper antecedent basis because claim 3 only specifies "at least one active integrator"

In claim 10, the recitation, "the signal quadrant amplifier" is considered to be vague and indefinite since there is no previous mention of any "single quadrant amplifier".

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, because it includes a limitation for "at least one different RC element which can be selectively connected via the processor circuit." It is unclear to one having ordinary skill in the art what it means to have a "different" RC element.

Claim 14 is rejected as being vague and indefinite because it recites, "a third power supply terminal" while there is no mention of any first and/or second power supply terminals. Therefore it is unclear to one having ordinary skill in the art how claim 14 limits the structure of its parent claims.

Claims 2, 5, 6, 7-11, 13, and 15 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the unclear language present in their respective parent claims.

### *Claim Rejections - 35 USC § 102*

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1, 2, 9, 11-13 and 16, as best understood, are rejected under 35

U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,207,101 to Haynes.

Haynes discloses a two-wire ultrasonic transmitter comprising a sensor that detects a quantity to be measured (column 2, lines 19-22), an analog end stage, comprising an amplifier circuit, connected downstream of the sensor (Figure 4b, "52"), a processor circuit, including a processor and drive circuit (column 7, lines 41-42) and an analog measurement signal transmission path (see subsequent circuitry from X1 in Figure 4a), the analog end stage converting an output of the sensor into an impressed output current with a magnitude which is a measure of the quantity to be measured (column 2, lines 26-29 and column 8, lines 6-36), the electronic transducer controlled/programmed with the processor circuit (column 2, lines 21-25), wherein during the normal operation of the ultrasonic transmitter apparatus, the processor circuit is shifted temporarily into a sleep mode (column 9, lines 44-47, column 14, lines 51-58, and column 17, lines 12-15), the analog measurement signal path and an analog scaling unit (i.e. current control circuit) are used, the output signal of the sensor and at least one analog setting value is supplied to the analog scaling unit (column 6, lines 1-3 and column 4, lines 57-60), and the output of the analog scaling unit is supplied to the analog end stage to maintain the output in the range of 4mA to 20mA (see Figures 2 and 4b and column 16, lines 54-56).

Haynes also discloses that the analog scaling unit is an analog arithmetic power supply circuit that implements a power source that produces a non-zero DC voltage signal as the analog setting value (column 4, lines 60-61).

Haynes also discloses that the analog end stage includes, between the analog scaling unit and the subsequent analog end stage circuitry, and attenuator comprising an RC element (column 2, lines 58-60 and column 8, lines 52-64) wherein an error output of the attenuator can be compensate by a control circuit (i.e. comparator with threshold detection) (column 8, line 65 to column 9, line 9). Further, as noted above in the Claim Objections, it has been held that the recitation that an element is "capable of" performing a function is not a positive limitation but only requires the ability to so perform and does not constitute a patentable limitation. See In re Hutchison, 69 USPQ 138.

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 3 and 4, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Haynes in view of U.S. Patent No. 5,477,735 to Li.

As noted above, Haynes teaches many of the features of the claimed invention and while the invention of Haynes does include a scaling circuit connected to a processing circuit and the sensing device to produce a corresponding DC voltage signal, Haynes does not specifically disclose including an active integrator as an actuator for the DC voltage signal.

Li teaches a two-wire constant current powered transducer including a sensing device that outputs a measured signal to a first stage comprising an active integrator (column 5, lines 25-27 and Figure 2).

It would have been obvious to one having ordinary skill in the art to modify the invention of Haynes to include an active integrator as an actuator for the DC voltage signal, as taught by Li, because Haynes discloses a piezoelectric transducer as the sensing device (column 7, lines 64-66) and further includes determining the output of the transducer in terms of velocity (column 11, lines 17-26) and the invention of Li suggests a corresponding method for converting the acceleration signal of a piezoelectric transducer into a desired velocity signal (abstract).

Although the combination of Haynes and Li would provide an active integrator electrically coupled to the processing circuit rather that part of the processing circuit itself, it would have been obvious to one having ordinary skill in the art to provide the integrator and the processing circuit as one circuit in order to adhere to space constraints. Further, it has been held that forming in one piece which has formerly been formed in two pieces and put together involves only routine skill in the art (see Howard v. Detroit Stove Works, 150 U.S. 164 (1893)).

16. Claims 5, 7, and 8, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Haynes in view of U.S. Patent No. 5,047,914 to Dhyanchand et al.

As noted above, the invention of Haynes teaches a current control circuit/analog arithmetic circuit including a voltage regulator circuit and a plurality of transistors and operational amplifiers (Figure 2, "40" and "44") but does not include an adder, subtractor, or multiplier.

Dhyanchand teaches a current controlled inverter including an analog section comprising an adder ("16") attached to the input of an analog multiplier ("22") and an adder ("26") and subtractor ("28") attached to the output of the analog multiplier (Figure 2).

It would have been obvious to one having ordinary skill in the art to modify the invention of Haynes to include a specific control circuit/analog arithmetic circuit including adder, subtractor, and multiplier, as taught by Dhyanchand, because Dhyanchand suggests that the combination would have provided a method for controlling an output signal while adjusting the signal for any error obtained by the process (column 3, lines 42-54).

## ***Conclusion***

17. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U.S. Patent No. 6,512,358 to Klofer et al. teaches a measuring device for measuring a process variable employing a 4-20 mA current loop.

U.S. Patent No. 5,254,992 to Keen et al. teaches a low power electronic measuring system comprising a sleep mode function.

International Publication No. WO 99/60340 to Gunion et al. teaches a measurement circuit employing dual floating power supplies in a loop-powered arrangement.

International Publication No. WO 88/01417 to Frick et al. teaches a two-wire analog transducer circuit with digital control.

DE Patent No. 4016922 to Popp teaches a two-wire electrical measurement transducer with a main analog path and digital correction path.

TRAC Application Note, "Single Quadrant and Four Quadrant Multiplier Utilising TRAC" teaches applications of single-quadrant multipliers.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (703)308-1309. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (703)308-1677. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

jrw
December 14, 2003

MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800